

Amendments to the Claims

1. (Currently Amended) A method of transmitting a
2 communication from a first network entity to a second network entity, wherein the
first network entity and the second network entity are coupled to a communication
4 medium, comprising:
6 receiving a communication from a process operating on a first network entity,
8 wherein the communication is directed to a second network entity;
10 ~~distributing elements of said communication into multiple portions, each said portion corresponding to one of a plurality of channels established to convey a communication between said first network entity and said second network entity;~~
12 ~~allotting individual elements of said communication among a plurality of channels established to convey a communication between said first network entity and said second network entity;~~
14 sending a first allotment of elements portion of said communication on a first
16 channel established on a first communication medium coupled to said first network
18 entity and said second network entity; and
20 sending a second allotment of elements portion of said communication on a second channel established on a second communication medium coupled to said first network entity and said second network entity;
wherein said communication is transmitted to said second entity at a data rate
in excess of one gigabit per second.

2. (Cancelled)

3. (Currently Amended) The method of claim 1, wherein said
2 communication is an Ethernet frame and wherein each of said multiple elements portions of said communication comprises one or more bytes.

4. (Previously Presented) A method of transmitting a
2 communication from a first network entity to a second network entity, wherein the
first network entity and the second network entity are coupled to a communication
4 medium, comprising:
receiving a communication at a distribution module of a network interface

6 device from a medium access control module across a first interface, wherein said
distribution module is configured to distribute portions of said communication among
8 a plurality of communication channels;
distributing elements of said communication into multiple portions;
10 sending a first portion of said communication on a first channel established on
a first communication medium coupled to said first network entity and said second
12 network entity; and
sending a second portion of said communication on a second channel
14 established on a second communication medium coupled to said first network entity
and said second network entity.

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5. (Original) The method of claim 4, wherein said first interface is
2 configured to convey said communication at a data rate exceeding one gigabit per
second.

6. (Original) The method of claim 4, in which said sending a first
2 portion of said communication comprises forwarding an apportionment of said
communication elements to a first physical coding module across a second interface;
4 and
wherein said first physical coding module is configured to encode said
6 apportionment of communication elements into a series of codes for transmission over
said first communication medium.

7. (Original) The method of claim 6, wherein said first physical
2 coding module:
encodes a first element of said apportionment with a first start code if said first
4 element is the first element of said communication and otherwise encodes said first
element of said apportionment with a second start code; and
6 encodes a last element of said apportionment with a first end code if said last
element is the last element of said communication and otherwise encodes said last
8 element of said apportionment with a second end code.

8. (Original) The method of claim 6, wherein said second interface is
2 configured to convey said first apportionment at a data rate exceeding one gigabit per

second.

9. (Previously Presented) The method of claim 4, in which said
2 distributing comprises allotting elements of said communication among a plurality of
channels established to convey a communication between said first network entity and
4 said second network entity.

10. (Original) The method of claim 9, wherein each of said channels is
2 configured to traverse a separate physical communication link.

11. (Original) The method of claim 9, wherein each of said channels is
2 configured to traverse a common physical communication link, said common physical
communication link comprising said first communication medium and said second
4 communication medium.

12. (Previously Presented) The method of claim 4, wherein:
2 one of said first portion of said communication and said second portion of said
communication includes a first start symbol configured to indicate a start of said
4 communication and the other of said first portion and said second portion includes a
second start symbol configured to indicate a start of a portion of said communication;
6 and
one of said first portion of said communication and said second portion of said
8 communication includes a first end symbol configured to indicate an end of said
communication and the other of said first portion and said second portion includes a
10 second end symbol configured to indicate an end of a portion of said communication.

13. (Previously Presented) The method of claim 4, further
2 comprising:
transmitting a first idle signal on said first channel and said second channel
4 prior to said receiving; and
transmitting a different idle signal on said first channel and said second
6 channel after said sending a second portion of said communication.

14. (Previously Presented) The method of claim 4, further

2 comprising:
4 encoding the first element of said first portion of said communication with a
6 first starting delimiter; and
8 encoding the first element of said second portion of said communication with
10 a second starting delimiter.

15. (Original) The method of claim 14, further comprising:
2 encoding the last element of said first portion of said communication with a
4 first ending delimiter; and
6 encoding the last element of said second portion of said communication with a
8 second ending delimiter.

16. (Previously Presented) A method of receiving a communication
2 at a second network entity from a first network entity, wherein the first network entity
4 and the second network entity are coupled to a dedicated communication medium,
6 comprising:
8 receiving at a second network entity a first idle code on each of multiple
10 channels established between a first network and said second network entity;
12 receiving at said second network entity a first portion of a communication
14 from said first network entity on a first channel of said multiple channels;
16 receiving at said second network entity a second portion of said
18 communication on a second channel of said multiple channels;
20 collecting an element of said first portion and an element of said second
22 portion;
24 receiving at said second network entity a second idle code, different from said
26 first idle code, on each of said multiple channels; and
28 forwarding said communication toward a process operating on said second
30 network entity.

17. (Original) The method of claim 16, wherein said communication is
2 an Ethernet frame.

18. (Previously Presented) The method of claim 17, wherein said
2 first portion of a communication comprises:

4 and
a first start signal configured to indicate a beginning of said communication;
a first set of elements of said communication.

19. (Previously Presented) The method of claim 18, wherein said
2 second portion of a communication comprises:
a second start signal configured to indicate a beginning of a portion of said
4 communication, said second start signal differing from said first start signal; and
a second set of elements of said communication.

20. (Original) The method of claim 16, wherein said first
2 communication channel and said second communication channel traverse a common
communication medium.

21. (Original) The method of claim 16, wherein said first
2 communication channel and said second communication channel traverse separate
physical mediums.

22. (Original) The method of claim 16, in which said collecting
2 comprises:
receiving at a collection module an element of said first communication
4 portion and an element of said second communication portion; and
combining said element of said first communication portion and said element
6 of said second communication portion.

23. (Previously Presented) A method of receiving a communication
2 at a second network entity from a first network entity, wherein the first network entity
and the second network entity are coupled to a dedicated communication medium,
4 comprising:
receiving at a second network entity a first portion of a communication from a
6 first network entity on a first channel established between said first network entity and
said second network entity;

8 receiving at said second network entity a second portion of said
communication on a second channel established between said first network entity and
10 said second network entity;

12 receiving at a collection module an element of said first communication
portion and an element of said second communication portion;

14 combining said element of said first communication portion and said element
of said second communication portion; and

16 sending said combined elements to a medium access control module across a
first interface toward a process operating on said second network entity.

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24. (Original) The method of claim 23, wherein said first interface is
2 configured to convey said combined elements at a data rate greater than one gigabit
per second.

25. (Previously Presented) The method of claim 23, further
2 comprising:
4 receiving a first idle code on each of said first channel and said second channel
prior to said receiving a first portion of a communication; and
6 receiving a second idle code on each of said first channel and said second
channel after said receiving a second portion of said communication.

26. (Cancelled)

27. (Cancelled)

28. (Original) A method of receiving a communication from a first
2 network entity at a second network entity across a plurality of channels, comprising:
4 receiving synchronization information across each of a plurality of channels
coupling a first network entity to a second network entity;
6 receiving at said second network entity a set of bytes across each of said
channels;
8 detecting a first byte and a last byte in each of said sets of bytes;
decoding each of said sets of bytes; and
re-assembling said sets of bytes into a stream of bytes of a communication

10 directed from said first network entity to said second network entity.

29. (Original) The method of claim 28, in which:
2 said receiving synchronization information comprises receiving a first idle
code on each of said channels; and
4 wherein said method further comprises receiving a second idle code on each of
said channels after said receiving a set of bytes across each of said channels.

30. (Previously Presented) A method of operating a computer to
2 communicate with a network entity, comprising:
4 operating a medium access control module configured to communicate a first
frame from a computer system to a network entity and receive a second frame at said
computer system from said network entity;
6 operating a distribution module to apportion contents of said first frame
among a plurality of communication channels coupling said computer system to said
8 network entity through one or more communication links; and
10 operating a collection module to combine contents of said second frame
received through said plurality of communication channels;
12 wherein said distribution module and said collection module interface with
14 each of said communication channels at a rate exceeding one gigabit per second; and
16 wherein said medium access control module interfaces with said distribution
module and said collection module at a rate substantially equal to the sum of said
rates at which said communication channels interface with said distribution module
and said collection module.

31. (Original) The method of claim 30, further comprising:
2 operating a physical medium module configured to encode said first frame
contents for transmission over said communication channels and decode said second
4 frame contents received over said communication channels.

32. (Cancelled)

33. (Previously Presented) The method of claim 30, wherein said
2 first frame is a communication frame configured for transmission over a network

compatible with an Ethernet communication protocol.

34. (Original) A network interface device for coupling a computer
2 system to a network, comprising:
4 a medium access control module configured to communicate with an
application executing on a computer system;
6 multiple physical coding modules, wherein each said physical coding module
is configured to encode packet bytes for transmission on a network medium and
decode encoded bytes received from said network medium, and wherein said network
8 medium is configured to carry said bytes between said computer system and a
network entity;
10 a distributor configured to accept a first packet from said medium access
control module and divide said first packet into a first plurality of packet bytes for
12 transmission across said network medium; and
14 a collector configured to accept a second plurality of packet bytes from said
multiple physical coding modules and combine said second plurality of packet bytes
into a second packet for transfer to said medium access control module.

35. (Original) The network interface device of claim 34, further
2 comprising a first set of interfaces coupling said multiple physical coding modules to
said distributor and said collector, wherein each of said first set of interfaces is
4 configured to operate at a rate exceeding one gigabit per second.

36. (Original) The network interface device of claim 35, further
2 comprising a second interface coupling said distributor and said collector to said
medium access control module, wherein said second interface is configured to operate
4 at a rate approximately equal to the sum of said operation rates of said first set of
interfaces.

37. (Previously Presented) The network interface device of claim
2 36, wherein said second interface is configured to operate at a data rate of
approximately ten gigabits per second.

38. (Cancelled)

39. (Previously Presented) A device for implementing an Ethernet
2 protocol to communicate Ethernet frames between a first network entity and a second
network entity, comprising:
4 a distributor configured to distribute bytes of a first Ethernet frame over a
plurality of channels in a first order;
6 a collector configured to receive bytes of a second Ethernet frame over said
channels in a second order;
8 a first interface coupling said distributor and said collector to a medium access
control module at a data rate exceeding one gigabit per second, wherein data are
10 transferred across said first interface in multi-byte units in synchronization with both
edges of a clock signal; and
12 a second interface coupling said distributor and said collector to a first
physical coding module at a data rate exceeding one gigabit per second in
14 synchronization with both edges of a second clock signal.

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40. (Previously Presented) The device of claim 39, wherein said
2 first order and said second order are round robin.

41. (Currently Amended) The method of claim 1, wherein:
2 said receiving comprises receiving a communication at a distribution module
of a network interface device from a medium access control module across a first
4 interface; and
6 said distribution module is configured to perform said allotting of elements
distribution of ~~said portions~~ of said communication among said plurality of
communication channels, including said first channel and said second channel.

42. (Previously Presented) The method of claim 41, wherein said
2 first interface is configured to convey said communication at a data rate exceeding
one gigabit per second.

43. (Currently Amended) The method of claim 41, in which said
2 sending a first allotment of elements portion of said communication comprises
forwarding an apportionment of said communication elements to a first physical

4 coding module across a second interface; and
wherein said first physical coding module is configured to encode said
6 apportionment of communication elements with a series of codes for transmission
over said first communication medium.

44. (Previously Presented) The method of claim 43, wherein said
2 first physical coding module:
encodes a first element of said apportionment with a first start code if said first
4 element is the first element of said communication and otherwise encodes said first
element of said apportionment with a second start code; and
6 encodes a last element of said apportionment with a first end code if said last
element is the last element of said communication and otherwise encodes said last
8 element of said apportionment with a second end code.

45. (Previously Presented) The method of claim 43, wherein said
2 second interface is configured to convey said apportionment at a data rate exceeding
one gigabit per second.

46. (Cancelled)

47. (Currently Amended) The method of claim 1, wherein:
2 one of said first allotment of elements portion of said communication and said
second allotment of elements portion of said communication includes a first start
4 symbol configured to indicate a start of said communication and the other of said first
allotment portion and said second allotment portion includes a second start symbol
6 configured to indicate a start of a portion of said communication; and
one of said first allotment of elements portion of said communication and said
8 second allotment of elements portion of said communication includes a first end
symbol configured to indicate an end of said communication and the other of said first
10 allotment portion and said second allotment portion includes a second end symbol
configured to indicate an end of a portion of said communication.

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48. (Currently Amended) The method of claim 1, further
comprising:

transmitting a first idle signal on said first channel and said second channel
4 prior to said receiving; and
transmitting a second idle signal on said first channel and said second channel
6 after said sending said second allotment of elements a second portion of said
communication;
8 wherein said second idle signal is different from said first idle signal.

Claim 49
49. (Currently Amended) The method of claim 1, further
2 comprising:
4 encoding the first element of said first allotment of elements portion of said
6 communication with a first starting delimiter; and
8 encoding the first element of said second allotment of elements portion of said
communication with a second starting delimiter;
wherein said second starting delimiter is different from said first starting
delimited.

Sub A
50. (Currently Amended) The method of claim 49, further
2 comprising:
4 encoding the last element of said first allotment of elements portion of said
6 communication with a first ending delimiter; and
8 encoding the last element of said second allotment of elements portion of said
communication with a second ending delimiter;
wherein said second ending delimiter is different from said first ending
delimited.

51. (Currently Amended) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of transmitting a communication from a first network entity to a second
4 network entity, the method comprising:
6 receiving a communication from a process operating on a first network entity,
8 wherein the communication is directed to a second network entity;
distributing elements of said communication into multiple portions, each said
portion corresponding to one of a plurality of channels established to convey a
communication between said first network entity and said second network entity;

10 allotting individual elements of said communication among a plurality of
11 channels established to convey a communication between said first network entity and
12 said second network entity;
13 sending a first allotment of elements portion of said communication on a first
14 channel established on a first communication medium coupled to said first network
15 entity and said second network entity; and
16 sending a second allotment of elements portion of said communication on a
17 second channel established on a second communication medium coupled to said first
18 network entity and said second network entity;
19 wherein said communication is transmitted to said second entity at a data rate
20 in excess of one gigabit per second.

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52. (Previously Presented) The method of claim 4, wherein said
2 communication is transmitted to said second entity at a data rate in excess of one
3 gigabit per second.

53. (Previously Presented) The method of claim 4, wherein said
2 communication is an Ethernet frame and wherein each of said multiple portions of
3 said communication comprises one or more bytes.

54. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
3 a method of transmitting a communication from a first network entity to a second
4 network entity, the method comprising:

5 receiving a communication at a distribution module of a network interface
6 device from a medium access control module across a first interface, wherein said
7 distribution module is configured to distribute portions of said communication among
8 a plurality of communication channels;

9 distributing elements of said communication into multiple portions;
10 sending a first portion of said communication on a first channel established on
11 a first communication medium coupled to said first network entity and said second
12 network entity; and

13 sending a second portion of said communication on a second channel
14 established on a second communication medium coupled to said first network entity

and said second network entity.

55. (Previously Presented) The method of claim 22, wherein said
2 forwarding comprises sending said combined elements to a medium access control
module across a first interface toward a process operating on said second network
4 entity.

56. (Previously Presented) The method of claim 55, wherein said
2 first interface is configured to convey said combined elements at a data rate greater
than one gigabit per second.

57. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of receiving a communication at a second network entity from a first
4 network entity, the method comprising:

receiving at a second network entity a first idle code on each of multiple
6 channels established between a first network and said second network entity;
receiving at said second network entity a first portion of a communication
8 from said first network entity on a first channel of said multiple channels;
receiving at said second network entity a second portion of said
10 communication on a second channel of said multiple channels;
collecting an element of said first portion and an element of said second
12 portion;
receiving at said second network entity a second idle code, different from said
14 first idle code, on each of said multiple channels; and
forwarding said communication toward a process operating on said second
16 network entity.

58. (Previously Presented) The method of claim 23, wherein said
2 communication is an Ethernet frame.

59. (Previously Presented) The method of claim 23, wherein said
2 first portion of a communication comprises:

4 and
a first start signal configured to indicate a beginning of said communication;
a first set of elements of said communication.

60. (Previously Presented) The method of claim 59, wherein said
2 second portion of a communication comprises:
a second start signal configured to indicate a beginning of a portion of said
4 communication, said second start signal differing from said first start signal; and
a second set of elements of said communication.

61. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of receiving a communication at a second network entity from a first
4 network entity, the method comprising:
receiving at a second network entity a first portion of a communication from a
6 first network entity on a first channel established between said first network entity and
said second network entity;
8 receiving at said second network entity a second portion of said
communication on a second channel established between said first network entity and
10 said second network entity;
receiving at a collection module an element of said first communication
12 portion and an element of said second communication portion;
combining said element of said first communication portion and said element
14 of said second communication portion; and
sending said combined elements to a medium access control module across a
16 first interface toward a process operating on said second network entity.

62. (Previously Presented) The method of claim 28, wherein:
2 the communication is a packet; and
said receiving a set of bytes comprises receiving across each said channel a
4 mini-frame comprising a portion of the packet.

63. (Previously Presented) The method of claim 62, wherein said
2 detecting comprises:

on a first of said channels, identifying a start of packet delimiter; and
4 on the other channels of said channels, identifying a start of mini-frame
delimiter.

64. (Previously Presented) The method of claim 62, wherein said
2 detecting comprises:
on a first of said channels, identifying an end of packet delimiter; and
4 on the other channels of said channels, identifying an end of mini-frame
delimiter.

65. (Previously Presented) The method of claim 62, wherein:
2 said re-assembling comprises merging said mini-frames to re-form the packet;
and
4 the method further comprises forwarding the packet toward a medium access
control module.

66. (Previously Presented) The method of claim 28, wherein each
2 said set of bytes is received at a data rate exceeding one gigabit per second.

67. (Previously Presented) The method of claim 28, wherein said
2 decoding comprises:
at a physical coding module coupled to each of said channels, decoding a set
4 of bytes from codes received over said channel.

68. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of receiving a communication from a first network entity at a second
4 network entity across a plurality of channels, the method comprising:
receiving synchronization information across each of a plurality of channels
6 coupling a first network entity to a second network entity;
receiving at said second network entity a set of bytes across each of said
8 channels;
detecting a first byte and a last byte in each of said sets of bytes;
10 decoding each of said sets of bytes; and

re-assembling said sets of bytes into a stream of bytes of a communication
12 directed from said first network entity to said second network entity.

69. (Previously Presented) The method of claim 30, wherein said
2 distribution module apportions said contents of said first frame by:
4 receiving a portion of said first frame from said medium access control
module; and
6 distributing said portion of said first frame among said plurality of
communication channels in round robin order.

70. (Previously Presented) The method of claim 30, wherein said
2 collection module combines said contents of said second frame by:
4 merging, in round robin order, segments of said second frame received from
said plurality of communication channels; and
forwarding said merged segments to said medium access control module.

71. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of operating a computer to communicate with a network entity, the method
4 comprising:
6 operating a medium access control module configured to communicate a first
frame from a computer system to a network entity and receive a second frame at said
computer system from said network entity;
8 operating a distribution module to apportion contents of said first frame
among a plurality of communication channels coupling said computer system to said
10 network entity through one or more communication links; and
12 operating a collection module to combine contents of said second frame
received through said plurality of communication channels;
14 wherein said distribution module and said collection module interface with
each of said communication channels at a rate exceeding one gigabit per second; and
16 wherein said medium access control module interfaces with said distribution
module and said collection module at a rate substantially equal to the sum of said
rates at which said communication channels interface with said distribution module
18 and said collection module.

72. (Previously Presented) A method of transmitting a communication from a first network entity to a second network entity, wherein the first network entity and the second network entity are coupled to a communication medium, comprising:

receiving a communication from a process operating on a first network entity, wherein the communication is directed to a second network entity;

distributing elements of said communication into multiple portions;

sending a first portion of said communication on a first channel established on a first communication medium coupled to said first network entity and said second network entity; and

sending a second portion of said communication on a second channel established on a second communication medium coupled to said first network entity and said second network entity;

wherein said communication is transmitted to said second entity at a data rate in excess of one gigabit per second; and

wherein one of said first portion of said communication and said second portion of said communication includes a first start symbol configured to indicate a start of said communication and the other of said first portion and said second portion includes a second start symbol configured to indicate a start of a portion of said communication; and

wherein one of said first portion of said communication and said second portion of said communication includes a first end symbol configured to indicate an end of said communication and the other of said first portion and said second portion includes a second end symbol configured to indicate an end of a portion of said communication.

73. (Previously Presented) The method of claim 72, wherein:

said receiving comprises receiving a communication at a distribution module of a network interface device from a medium access control module across a first interface; and

said distribution module is configured to distribute portions of said communication among a plurality of communication channels, including said first channel and said second channel.

74. (Previously Presented) The method of claim 73, wherein said
2 first interface is configured to convey said communication at a data rate exceeding
one gigabit per second.

75. (Previously Presented) The method of claim 73, in which said
2 sending a first portion of said communication comprises forwarding an apportionment
of said communication elements to a first physical coding module across a second
4 interface; and
wherein said first physical coding module is configured to encode said
6 apportionment of communication elements into a series of codes for transmission over
said first communication medium.

76. (Previously Presented) The method of claim 75, wherein said
2 first physical coding module:
encodes a first element of said apportionment with a first start code if said first
4 element is the first element of said communication and otherwise encodes said first
element of said apportionment with a second start code; and
6 encodes a last element of said apportionment with a first end code if said last
element is the last element of said communication and otherwise encodes said last
8 element of said apportionment with a second end code.

77. (Previously Presented) The method of claim 75, wherein said
2 second interface is configured to convey said first apportionment at a data rate
exceeding one gigabit per second.

78. (Previously Presented) The method of claim 72, in which said
2 distributing comprises:
allotting elements of said communication among a plurality of channels
4 established to convey a communication between said first network entity and said
second network entity, including said first channel and said second channel.

79. (Previously Presented) The method of claim 72, further
2 comprising:

transmitting a first idle signal on said first channel and said second channel
4 prior to said receiving; and
transmitting a second idle signal on said first channel and said second channel
6 after said sending a second portion of said communication;
wherein said second idle signal is different from said first idle signal.

80. (Previously Presented) The method of claim 72, further
2 comprising:
encoding the first element of said first portion of said communication with a
4 first starting delimiter; and
encoding the first element of said second portion of said communication with a
6 second starting delimiter;
wherein said second starting delimiter is different from said first starting
8 delimiter.

81. (Previously Presented) The method of claim 80, further
2 comprising:
encoding the last element of said first portion of said communication with a
4 first ending delimiter; and
encoding the last element of said second portion of said communication with a
6 second ending delimiter;
wherein said second ending delimiter is different from said first ending
8 delimiter.

82. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of transmitting a communication from a first network entity to a second
4 network entity, wherein the first network entity and the second network entity are
coupled to a communication medium, the method comprising:
6 receiving a communication from a process operating on a first network entity,
wherein the communication is directed to a second network entity;
8 distributing elements of said communication into multiple portions;
sending a first portion of said communication on a first channel established on
10 a first communication medium coupled to said first network entity and said second

network entity; and

12 sending a second portion of said communication on a second channel
13 established on a second communication medium coupled to said first network entity
14 and said second network entity;

15 wherein said communication is transmitted to said second entity at a data rate
16 in excess of one gigabit per second; and

17 wherein one of said first portion of said communication and said second
18 portion of said communication includes a first start symbol configured to indicate a
19 start of said communication and the other of said first portion and said second portion
20 includes a second start symbol configured to indicate a start of a portion of said
21 communication; and

22 wherein one of said first portion of said communication and said second
23 portion of said communication includes a first end symbol configured to indicate an
24 end of said communication and the other of said first portion and said second portion
25 includes a second end symbol configured to indicate an end of a portion of said
26 communication.

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83. (Previously Presented) A method of transmitting a
1 communication from a first network entity to a second network entity, wherein the
2 first network entity and the second network entity are coupled to a communication
3 medium, comprising:

4 transmitting a first idle signal on:
5 a first channel established on a first communication medium coupled to
6 said first network entity and said second network entity; and

7 a second channel established on a second communication medium
8 coupled to said first network entity and said second network entity;

9 receiving a communication from a process operating on said first network
10 entity, wherein the communication is directed to said second network entity;

11 distributing elements of said communication into multiple portions;

12 sending a first portion of said communication on said first channel;

13 sending a second portion of said communication on said second channel; and

14 transmitting a second idle signal on said first channel and said second channel

15 after said sending a second portion of said communication, wherein said second idle
16 signal is different from said first idle signal;

18 wherein said communication is transmitted to said second entity at a data rate
in excess of one gigabit per second.

84. (Previously Presented) The method of claim 83, wherein:
2 said receiving comprises receiving a communication at a distribution module
of a network interface device from a medium access control module across a first
4 interface; and
6 said distribution module is configured to distribute portions of said
communication among a plurality of communication channels, including said first
channel and said second channel.

85. (Previously Presented) The method of claim 84, wherein said
2 first interface is configured to convey said communication at a data rate exceeding
one gigabit per second.

86. (Previously Presented) The method of claim 84, in which said
2 sending a first portion of said communication comprises forwarding an apportionment
of said communication elements to a first physical coding module across a second
4 interface; and
6 wherein said first physical coding module is configured to encode said
apportionment of communication elements into a series of codes for transmission over
said first communication medium.

87. (Previously Presented) The method of claim 86, wherein said
2 first physical coding module:
4 encodes a first element of said apportionment with a first start code if said first
element is the first element of said communication and otherwise encodes said first
element of said apportionment with a second start code; and
6 encodes a last element of said apportionment with a first end code if said last
element is the last element of said communication and otherwise encodes said last
8 element of said apportionment with a second end code.

88. (Previously Presented) The method of claim 86, wherein said
2 second interface is configured to convey said first apportionment at a data rate

exceeding one gigabit per second.

89. (Previously Presented) The method of claim 83, in which said
2 distributing comprises:

4 allotting elements of said communication among a plurality of channels
4 established to convey a communication between said first network entity and said
second network entity, including said first channel and said second channel.

90. (Previously Presented) The method of claim 83, wherein:
2 one of said first portion of said communication and said second portion of said
communication includes a first start symbol configured to indicate a start of said
4 communication and the other of said first portion and said second portion includes a
second start symbol configured to indicate a start of a portion of said communication;
6 and

8 one of said first portion of said communication and said second portion of said
communication includes a first end symbol configured to indicate an end of said
communication and the other of said first portion and said second portion includes a
10 second end symbol configured to indicate an end of a portion of said communication.

91. (Previously Presented) The method of claim 83, further
2 comprising:

4 encoding the first element of said first portion of said communication with a
first starting delimiter; and

6 encoding the first element of said second portion of said communication with
a second starting delimiter;

8 wherein said second starting delimiter is different from said first starting
delimiter.

92. (Previously Presented) The method of claim 91, further
2 comprising:

4 encoding the last element of said first portion of said communication with a
first ending delimiter; and

6 encoding the last element of said second portion of said communication with a
second ending delimiter;

wherein said second ending delimiter is different from said first ending
8 delimiter.

93. (Previously Presented) The method of claim 83, wherein said
2 sending a first portion of said communication comprises:
encoding said first portion of said communication with a first start code if said
4 first portion of said communication includes the initial byte of said communication.

94. (Previously Presented) The method of claim 93, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion of said communication with a second start code,
4 different from said first start code, if said first portion of said communication does not
include the initial byte of said communication.

95. (Previously Presented) The method of claim 93, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion of said communication without a start code if said
4 first portion of said communication does not include the initial byte of said
communication.

96. (Previously Presented) The method of claim 83, wherein said
2 sending a second portion of said communication comprises:
encoding said second portion of said communication with a first end code if
4 said second portion of said communication includes the final byte of said
communication.

97. (Previously Presented) The method of claim 96, wherein said
2 sending a second portion of said communication further comprises:
encoding said second portion of said communication with a second end code,
4 different from said first end code, if said second portion of said communication does
not include the final byte of said communication.

98. (Previously Presented) The method of claim 96, wherein said
2 sending a second portion of said communication further comprises:

encoding said second portion of said communication without an end code if
4 said second portion of said communication does not include the final byte of said
communication.

99. (Previously Presented) A computer readable storage medium
2 storing instructions that, when executed by a computer, cause the computer to perform
a method of transmitting a communication from a first network entity to a second
4 network entity, wherein the first network entity and the second network entity are
coupled to a communication medium, the method comprising:
6 transmitting a first idle signal on:
8 a first channel established on a first communication medium coupled to
said first network entity and said second network entity; and
10 a second channel established on a second communication medium
coupled to said first network entity and said second network entity;
12 receiving a communication from a process operating on said first network
entity, wherein the communication is directed to said second network entity;
14 distributing elements of said communication into multiple portions;
16 sending a first portion of said communication on said first channel;
18 sending a second portion of said communication on said second channel; and
20 transmitting a second idle signal on said first channel and said second channel
after said sending a second portion of said communication, wherein said second idle
signal is different from said first idle signal;
wherein said communication is transmitted to said second entity at a data rate
in excess of one gigabit per second.

100. (Previously Presented) The device of claim 39, wherein said
2 distributor distributes a substantially equivalent number of bytes of the first Ethernet
frame over each channel in said plurality of channels.

101. (Previously Presented) The device of claim 39, wherein said
2 collector receives a substantially equivalent number of bytes of the second Ethernet
frame over each channel in said plurality of channels.

102. (Previously Presented) The device of claim 39, further

2 comprising a separate physical coding module for each channel in said plurality of channels, including said first physical coding module corresponding to a first channel.

103. (Previously Presented) The device of claim 102, wherein each 2 said physical coding module is configured to encode the bytes of the first Ethernet frame that are distributed over the corresponding channel in said plurality of channels.

104. (Previously Presented) The device of claim 39, wherein: 2 a first idle is distributed over each channel in said plurality of channels before distributing the bytes of the first Ethernet frame, and 4 a second idle, different from said first idle, is distributed over each channel in said plurality of channels after distributing the bytes of the first Ethernet frame.

105. (Previously Presented) The device of claim 39, wherein a first 2 set of bytes of the first Ethernet frame that are distributed over a first channel in said plurality of channels are preceded by a start code if said first set of bytes includes the 4 initial byte of the first Ethernet frame.

106. (Previously Presented) The device of claim 39, wherein bytes of 2 the first Ethernet frame that are distributed over each channel in said plurality of channels are preceded by a start code.

107. (Previously Presented) The device of claim 106, wherein said 2 start code is different for a first channel in said plurality of channels than for one or more other channels in said plurality of channels.

108. (Previously Presented) The device of claim 39, wherein a last 2 set of bytes of the first Ethernet frame that are distributed over a last channel in said plurality of channels are followed by an end code if said last set of bytes includes the 4 final byte of the first Ethernet frame.

109. (Previously Presented) The device of claim 39, wherein bytes of 2 the first Ethernet frame that are distributed over each channel in said plurality of channels are followed by an end code.

110. (Previously Presented) The device of claim 109, wherein said
2 end code is different for a first channel in said plurality of channels than for the other
channels in said plurality of channels.

111. (Previously Presented) The device of claim 39, wherein each
2 channel in said plurality of channel traverses a separate physical communication link
between the first network entity and the second network entity.

112. (Previously Presented) The device of claim 39, wherein each
2 channel in said plurality of channel traverses a common physical communication link
between the first network entity and the second network entity.

113. (Previously Presented) The device of claim 39, wherein said
2 collector is further configured to:
combine the bytes to produce the second Ethernet frame; and
4 forward the second Ethernet frame to the medium access control module.

114. (Previously Presented) The device of claim 39, wherein said
2 clock signal and said second clock signal are the same clock signal.

115. (Previously Presented) The network interface device of claim
2 34, wherein:
said multiple physical coding modules include a first physical coding module;
4 said first plurality of packet bytes includes a first subset of bytes of said first
packet; and
6 said first physical coding module is configured to:
encode said first subset of bytes with a first start code if said first
8 subset of bytes includes the initial byte of said first packet; and
otherwise, encode said first subset of bytes without a start code.

116. (Previously Presented) The network interface device of claim
2 34, wherein:
said multiple physical coding modules include a first physical coding module;

4 said first plurality of packet bytes includes a first subset of bytes of said first
4 packet; and
6 said first physical coding module is configured to:
6 encode said first subset of bytes with a first start code if said first
8 subset of bytes includes the initial byte of said first packet; and
8 otherwise, encode said first subset of bytes with a second start code
10 different from said first start code.

117. (Previously Presented) The network interface device of claim
2 34, wherein:
2 said multiple physical coding modules include a first physical coding module;
4 said first plurality of packet bytes includes a last subset of bytes of said first
4 packet; and
6 said first physical coding module is configured to:
6 encode said last subset of bytes with a first end code if said last subset
8 of bytes includes the final byte of said first packet; and
8 otherwise, encode said last subset of bytes without an end code.

118. (Previously Presented) The network interface device of claim
2 34, wherein:
2 said multiple physical coding modules include a first physical coding module;
4 said first plurality of packet bytes includes a last subset of bytes of said first
4 packet; and
6 said first physical coding module is configured to:
6 encode said last subset of bytes with a first end code if said last subset
8 of bytes includes the final byte of said first packet; and
8 otherwise, encode said last subset of bytes with a second end code
10 different from said first end code.

119. (Previously Presented) The method of claim 28, wherein said
2 decoding comprises:
2 decoding a first start code in a one of said sets of bytes, said one set of bytes
4 containing an initial byte of the communication;
4 wherein no other set of bytes includes a start code.

120. (Previously Presented) The method of claim 28, wherein said
2 decoding comprises:
decoding a first start code in one of said sets of bytes, said one set of bytes
4 containing an initial byte of the communication; and
decoding a second start code in a different set of bytes, said second start code
6 differing from said first start code.

121. (Previously Presented) The method of claim 28, wherein said
2 decoding comprises:
decoding a first end code in one of said sets of bytes, said one set of bytes
4 containing a final byte of the communication;
wherein no other set of bytes includes an end code.

122. (Previously Presented) The method of claim 28, wherein said
2 decoding comprises:
decoding a first end code in one of said sets of bytes, said one set of bytes
4 containing a final byte of the communication; and
decoding a second end code in a different set of bytes, said second end code
6 differing from said first end code.

123. (Previously Presented) The method of claim 4, wherein said
2 sending a first portion of said communication comprises:
encoding said first portion with a first start code if said first portion includes
4 the initial element of said communication.

124. (Previously Presented) The method of claim 123, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion without a start code if said first portion does not
4 include said initial element of said communication.

125. (Previously Presented) The method of claim 123, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion with a second start code, different from said first

4 start code, if said first portion does not include said initial element of said communication.

126. (Previously Presented) The method of claim 4, wherein said
2 sending a second portion of said communication comprises:
encoding said second portion with a first end code if said second portion
4 includes the final element of said communication.

127. (Previously Presented) The method of claim 123, wherein said
2 sending a second portion of said communication further comprises:
encoding said second portion without an end code if said second portion does
4 not include said final element of said communication.

128. (Previously Presented) The method of claim 123, wherein said
2 sending a second portion of said communication further comprises:
encoding said second portion with a second end code, different from said first
4 end code, if said second portion does not include said final element of said
communication.

129. (Previously Presented) The method of claim 1, wherein said
2 sending a first portion of said communication comprises:
encoding said first portion of said communication with a first start code if said
4 first portion of said communication includes the initial byte of said communication.

130. (Previously Presented) The method of claim 129, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion of said communication with a second start code,
4 different from said first start code, if said first portion of said communication does not
include the initial byte of said communication.

131. (Previously Presented) The method of claim 129, wherein said
2 sending a first portion of said communication further comprises:
encoding said first portion of said communication without a start code if said
4 first portion of said communication does not include the initial byte of said

communication.

132. (Previously Presented) The method of claim 1, wherein said
2 sending a second portion of said communication comprises:
encoding said second portion of said communication with a first end code if
4 said second portion of said communication includes the final byte of said
communication.

133. (Previously Presented) The method of claim 132, wherein said
2 sending a second portion of said communication further comprises:
encoding said second portion of said communication with a second end code,
4 different from said first end code, if said second portion of said communication does
not include the final byte of said communication.

134. (Previously Presented) The method of claim 132, wherein said
2 sending a second portion of said communication further comprises:
encoding said second portion of said communication without an end code if
4 said second portion of said communication does not include the final byte of said
communication.

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